DOCUMENT RESUME

ED 331 191 EC 232 669

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TITLE Horticulture Therapy Activities for Exceptional Children.
PUB DATE 89
NOTE 6p.; For related documents, see EC 232 668-670.
PUB TYPE Journal Articles (080) -- Reports - Descriptive (141)
JOURNAL CIT Journal of Therapeutic Horticulture; v4 p10-14 1989

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Elementary Secondary Education; *Enrichment Activities; *Gifted; *Heterogeneous Grouping; *Horticulture; *Learning Disabilities; *Plants (Botany); Postsecondary Education; Small Group Instruction; Summer Programs; Talent; Weekend Programs
IDENTIFIERS *Horticulture Therapy; Tennessee Technological University

ABSTRACT

The Tennessee Technological University offers an enrichment program (consisting of a summer session and three Saturdays) in which gifted children and children with learning disabilities are grouped together for activities. Horticulture is one of the few enrichment activities adaptable to both groups. Children are allowed to engage in the same activities when commonalities exist. This program included two types of activities referred to as Type I (general exploratory activities including demonstrations, speakers, films, slides, field trips, and other visual learning activities) and Type II (hands-on group activities to develop general skill and practical knowledge). Type I activities, introduced first, included introduction to plant anatomy using a rubber tree, tuberous roots, bulbs, and foliar embryos; examination of vascular tissue of plants; repotting and pruning demonstrations; and discussion of the earth's atmospheric cycles. Type II reinforcement activities followed, including examination of plant structures on individual rootbound plants; propagating new plants from cuttings; transplanting; making an air layer; and making a terrarium. Positive results noted included the integration of gifted students and students with learning disabilities in a united learning experience and provision of an opportunity for university level horticulture therapy and special education students to interact with students with exceptionalities. (Contains 8 references). (BRM)

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HORTICULTURAL THERAPY ACTIVITIES FOR EXCEPTIONAL CHILDREN

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In an enrichment program developed for exceptional children by the Department of Curriculum and Instruction at Tennessee Technological University, an effective method of teaching was realized through the use of horticultural activities. Gifted children and children with learning disabilities were grouped together for classroom discussions and laboratory activities. Type I activities introduced abstract biological concepts, which were reinforced through various Type II activities of concrete horticultural skills. Children were encouraged to interact and assist each other to complete projects. This intermingling of academic abilities incited learning and provided a setting for improved self-esteem.

Introduction

The Department of Curriculum and Instruction at Tennessee Technological University has offered a Program for Educational Development for exceptional children since 1981. The program has two components: the "Summer Program" and "Super Saturdays." The Summer Program takes place for six weeks during the summer months and involves 80 to 100 children. Super Saturdays, an extension of the Summer Program, was designed to keep staff in touch with the children during the school year. Super Saturdays were offered as day-long sessions three times per year, and as many as 200 children have participated.

The primary goal of the program is to provide children with basic skills on which future learning can be built. The children involved are exceptional, which is defined as: "children who have physical, mental, behavioral or sensory characteristics that differ from the majority of children, such that they require special education and related services to develop to maximum capacity" (Berdine and Blackhurst 1981). Although the breadth of the exceptionalities is large, the children who participated in this program were categorized as either gifted or learning disabled.

Joseph Renzulli (1977) defined gifted children as those possessing a cluster of three basic human traits: 1) above average general abilities in academic areas (IQ above 130), which is measured by achievement or intelligence tests; 2) high levels of creativity; and, 3) high levels of task commitment or willingness to pursue a topic of interest. Children with learning disabilities generally have normal intelligence (IQ between 85 and 129), with a major discrepency in achievement in one or more areas of reading, writing, comprehending, speaking, or mathematics (Lerner 1985). An inferior ability in some academic areas does not preclude a superior ability in other areas, therefore, children with learning disabilities may be successfully integrated with gifted children for instructional purposes.

The Renzulli Triad Model for Enrichment used in this program included three sequential steps, referred to as Type I, II, and III (Renzulli 1977). Type I enrichment, which were general exploratory activities, included demonstrations, speakers, films, slides, field trips, and other visual learning experiences. Type II enrichment consisted of group training in an area of interest. This included hands-on activities to develop general skills and practical knowledge in a given area. The Type III activities were individual investigations, research, or further study in the chosen field.

Methods

In the six-week Summer Program, assignments to classrooms of 8 to 10 children were determined by the age and academic ability of the children. A certified instructor with an additional 2 to 4 helpers (preservice university special education students) were responsible for each group. Exposure in the form of Type I activities took place in the classroom. For the children with learning disabilities, classroom schedules were structured and the appropriate Type II activities were prearranged. Gifted children were allowed to choose areas of interest for their Type II activities. On Super Saturdays, children were required to choose an area of interest from a short written description; both Type I and Type II activities took place on the same day.

Children in this program were allowed to engage in the same experience when commonalities existed and in different experiences when the activities were specific to a particular exceptionality. Gifted students and those with learning disabilities were sometimes placed together in small groups of 8 to 12 during Type II

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activities. Horticulture was one of the few enrichment activities that was adaptable to both groups. This intermingling of academic abilities was beneficial in that the group process developed leaders and followers. Group cohesiveness was enhanced (Bunn 1986) and self-esteem was improved in this setting (Hefley 1973; Relf 1981; Williams 1988).

Horticulture offered a wide variety of Type I and related Type II activities, which could be modified to each child's particular need. Type I activities were introduced first as demonstrations, tours, and other visual means, followed by the corresponding Type II hands-on activities to reinforce learning.

Introduction of various abstract biological concepts took place through Type I enrichment. Basic plant anatomy structures (leaves, stems, roots, nodes, internodes, and terminal and axillary buds) were identified on a large rubber tree, followed by a general description of each function. Additional plant anatomy was introduced when students were allowed to examine specialized structures, such as tubers, tuberous roots, scaly and laminate bulbs, rhizomes, corms, runners, a .f foliar embryos. A discussion of plant physiology and anatomy and was initiated through the demonstration of the air layer procedure of exposing the vascular tissue of plants (Hartmann & Kester 1983). The importance of repotting and pruning were discussed and demonstrated by comparing an overgrown, root-bound potted plant with a properly pruned plant with a healthy root system (Moore 1987).

A final Type I exposure involved a discussion of the earth's atmospheric cycles. The water cycle was discussed by explaining that moisture released through evaporation and transpiration returns to earth as precipitation. The air cycle was described through an explanation of photosynthesis and respiration.

After concepts were introduced, Type II enrichment was used to relate those concepts to concrete horticultural activities, which reinforced learning by allowing hands-on experiences. Each child was given an overgrown, root-bound plant to observe plant structures. Beginning with propagation by cuttings, children were instructed to pinch plants just below a node and to remove the leaf at the bottom to induce root formation. Containers, filled with moist rooting medium and cuttings, were watered and sealed in plastic bags to maintain humidity. The potted plant stems were properly pruned to the nodes, and it was explained how new growth develops at these points. A demonstration of transplanting showed children how to tap plants out of their pots, scruff the roots, place them in the proper size pot, and water them. In these Type II activities, all plant parts were identified and used for a particular purpose.

The Type II activity of making an air layer reinforced the understanding of plant anatomy and physiology. By slicing through the epidermis into the plant stem, children observed the vascular tissues within. An explanation of the functions of each component of the vascular tissue was given: phloem transports photosynthates from the leaves to the roots for energy storage, xylem transports water from the roots to all parts of the plant. The concepts of photosynthate accumulation and root formation were explained by removing a previously air-layered, rooted branch and transplanting it. Because knives were used, this activity was attempted only by more advanced children.

A final Type II activity consisted of making a terrarium. A previously constructed terrarium was used to show all of the cycles that occur in the earth's atmosphere also occur within the confined environment of the terrarium. Evaporation and transpiration were observed as water beading on top of the container, later returning to the soil as precipitation. Photosynthesis and the air cycles were evidenced when plants grew and thrived within the sealed terrarium environment. Construction of a terrarium was demonstrated and children were permitted to build their own.

Summary

In this program, horticulture was used as a teaching tool, and allowed the effective integration of gifted and learning disabled children into a united learning experience. Type I general exploratory activities were used to introduce numerous biological terminology and concepts. The subsequent Type II group training activities, which complemented the Type I activities, were designed to reinforce the terminology and various abstract concepts previously introduced. The concreteness of the hands-on horticultural activities enhanced concept development in the children with learning disabilities and simultaneously provided the gifted children with a broadened experience through the application of biological principles.

Conclusion

The goal of the program was to provide children who have learning disabilities and those who are gifted with basic skills that can serve as a foundation for future learning. Experiences indicate that this foundation is effectively provided through a broad but basic selection of horticultural activities. This program also provided an excellent opportunity for university level horticultural therapy and special education students to interact with exceptional children. The breadth of the abilities of the participating children created a learning experience for everyone involved.

REFERENCES

Berdine, W.H. and A.E. Blackhurst
1981 Introduction to special education, Little, Brown & Co., Inc., Boston, MA.

Bunn, D.E.
1986 Group cohesiveness is enhanced as children engage in plant stimulated discovery activities. Journal of Therapeutic Horticulture, I: 37-43.

Hartmann, H.T. and D.E. Kester
1983 Plant propagation: principles and practices (4th ed.). Prentice-Hall, Inc., Englewood Cliffs, NJ.

Lerner, J.
1985 Learning disabilities: theories, diagnosis, and teaching strategies. Houghton Mifflin Co., Boston, MA.

Moore, B.
1987 Growing with gardening: a horticultural therapy training manual. The University of North Carolina at Chapel Hill, Chapel Hill, NC.

Relf, P.D.
1981 Dynamics of horticultural therapy. Rehabilitation Literature 42(5-6): 147-150.

Renzulli, J.
1977 The enrichment triad model: A guide for developing defensible programs for the gifted and talented. Creative Learning Press, Mansfield Center, CT.

Williams, P.N. and R.H. Mattson
1988 Horticultural activities and demographic factors influence children's self esteem. Journal of Therapeutic Horticulture, III: 39-53.